

WHAT IS CLAIMED IS:

1. A method of administering a synthetic plasma-like solution to a subject in need thereof, said method comprising:

- (a) reducing the level of CO₂ in said subject; and
- (b) administering said plasma-like-solution to said subject; wherein said method results in a reduced risk of acidosis/acidemia.
- 2. The method according to Claim 1, wherein said method comprises reducing at least one of the blood level and brain level CO₂ of said subject.
- 3. The method according to Claim 1, wherein said subject has at least a subphysiologic blood flow.
- 4. The method according to Claim 1, wherein said subject is in circulatory arrest.
- 5. The method according to Claim 1, wherein said subject suffers from hypovolemia.
- 6. The method according to Claim 1, wherein said subject suffers from hyphemia.
- 7. The method according to Claim 1, wherein said subject suffers from low blood pressure.
- 8. The method according to Claim 1, wherein said subject is undergoing surgery.
- 9. The method according to Claim 8, wherein said surgery is low temperature surgery.
- 10. The method according to Claim 8, wherein said surgery is stopped heart surgery.
- 11. The method according to Claim 8, where said surgery includes replacing at

least a portion of the blood of said subject with said synthetic plasma like solution.

- 12. The method according to Claim 1, wherein said CO₂ level is reduced using a mechanical means.
- 13. The method according to Claim 1, wherein said CO₂ level is reduced using a pharmacological means.
- 14. The method according to Claim 1, wherein said synthetic plasma like solution comprises:

electrolytes;

a dynamic buffering system; and

at least one oncotic agent;

wherein said solution does not comprise a biological buffer.

- 15. The method according to Claim 14, wherein said dynamic buffering system comprises bicarbonate.
- 16. The method according to Claim 14, wherein said electrolytes of said plasmalike solution comprise sodium, potassium, calcium, chloride ion and magnesium.
- 17. The method according to Claim 14, wherein said solution further comprises a simple sugar.
- 18. The method according to Claim 1, wherein said synthetic plasma like solution comprises:

sodium, potassium, caloium, chloride ion and magnesium electrolytes;

bicarbonate; and

at least one starch oncotic agent; and

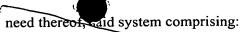
a simple sugar;

wherein said solution does not comprise a biological buffer.

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- (a) a synthetic plasma-like solution; and
- (b) a means for reducing the CO₂ level of a subject.
- 20. The system according to Claim 19, wherein said means is a mechanical means.
- 21. The system according to Claim 19, wherein said means is a pharmacological means.

22. A kit for administering a synthetic plasma-like solution to a subject in need thereof, said system comprising:

- (a) a synthetic plasma-like solution; and
- (b) a means for reducing the CO₂ level of a subject.
- 23. The kit according to Claim 22, wherein said means is a mechanical means.
- 24. The kit according to Claim 22, wherein said means is a pharmacological means.
- 25. The kit according to Claim 22, wherein said kit further comprises instructions for practicing the method of Claim 1.